UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,176	01/02/2004	George J. Geier	CS23398RL	3352

20280 7590 04/09/2007		

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EXAMINER
FLORES, LEON

ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	**Applicant(s)**
Office Action Summary	10/751,176	GEIER ET AL.
	Examiner	**Art Unit**	
	Leon Flores	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 February 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>*1-22*</u> is/are pending in the application.

    4a) Of the above claim(s) <u>*2,3 and 16*</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>*1,4-15 and 17-22*</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>*19 July 2004*</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 2/9/2007 have been fully considered but they are not

persuasive.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
        obviousness or nonobviousness.

Claims (1, 4-6, 11-15, 17 & 20-22) are rejected under 35 U.S.C. 103(a) as

being unpatentable over Tiemann et al (hereinafter Tiemann) (US Patent

6,009,118) in view of applicant's prior art.

Re claim 1, Tiemann discloses a method in a wireless communication device for
correcting a frequency error of a signal (see Fig. 4), the method comprising: receiving a
signal (see Fig. 4: element 211); generating a plurality of frequency offsets for a pre-
stored data (see Fig. 4: element 24); and generating the plurality of offset pre-stored
data sets based upon the plurality of frequency offsets; (see Fig. 4: element 24)
correlating the received signal with said plurality of offset prestored data sets (see Fig.
4: element 231 correlates the output of element 21 with the output of element 24);
generating at a predetermined data rate interval a plurality of signal correlations, each of
the plurality of correlations correlated to each of the plurality of offset prestored data
sets (see col. 9, lines 20-59 & col. 11, lines 55-67 & col. 12, lines 1-31); computing
signal magnitude information for each of the plurality of signal correlations (see Fig. 4:
element 29); sampling the signal magnitude information from each of the plurality of
signal correlations at a predetermined time (see col. 12, lines 7-13. It is inherent the
value at the output of element 29 is sampled to a specific time slot in the non-coherent
accumulator.); curve-fitting the computed frequency error modulation representation to
the sampled signal magnitude information; and computing the frequency error estimate
based upon the curve-fitting. (One skill in the art would know that curve-fitting is just
another term for peak detection. See col. 12, lines 19-20.). But the reference of
Tiemann fails to specifically disclose computing a frequency error modulation
representation of the received signal. However, the applicant's submitted prior art does.
(See paragraph 6 & 20)

The applicant's submitted as prior art that, it is well known in the art that the frequency error modulation representation of the received signal can be expressed as "sin(x)/x" where x is related to a product of an integration time of the received signal and the frequency error between the received signal and the frequency error between the received signal and the frequency used to generate the signal correlations.

Taking the combined teachings of Tiemann and applicant's prior art <u>as a whole</u>, it would have been obvious to one of ordinary skill in the art to have incorporated these steps into the system of Tiemann in the manner as claimed and as taught by applicant's prior art, for the benefit of estimating frequency offsets.

Re claim 4, Tiemann and applicant's prior art further teach wherein correlating the received signal with the plurality of offset pre-stored data sets coherently includes synchronizing the received signal with the pre-stored data at the predetermined data rate interval. (see col. 10, lines 45-46 & col. 18, lines 37-40. One skill in the art would know that offsetting the pre-stored data in the receiver will synchronize or align it to the received signal.)

Re claim 5, Tiemann and applicant's prior art further teach that wherein the plurality of signal correlations are a plurality of in-phase and quadrature correlations. (See col. 9, lines 60-67 & col. 10, lines 1-11.)

Re claim 6, Tiemann and applicant's prior art further teach that, wherein: the
wireless communication device is a global positioning system receiver (see col. 9, line
8), and the plurality signal correlations are a plurality of in-phase and quadrature
correlations. (This limitation has been analyzed and rejected w/r to claim 5.)

Re claim 11, the combination of Tiemann and applicant's prior art further teach
that, further comprising: re-sampling the signal magnitude information from each of the
plurality of signal correlations at a second predetermined time; curve-fitting the
computed frequency error modulation representation to the re-sampled signal
magnitude information; and re-computing a frequency error estimate based upon the
curve-fitting of the computed frequency error modulation representation to the sampled
signal magnitude information and to the re-sampled signal magnitude information.
(Hence, if frequency error computed does not fall within a predetermined threshold, the
system will enter a mode or iteration, which will strive to search for a correlation that
best estimates the error. Therefore, this claim has been analyzed and rejected in view
of claim 1.)

Re claim 12, the combination of Tiemann and applicant's prior art further teach
that, further comprising: segmenting time-wise each of the plurality of signal correlations
into a predetermined number of signal correlation time-segments (see col. 11, lines 55-
67 & col. 12, lines 1-31.); re-sampling the signal magnitude information from each signal
correlation time-segment of the plurality of signal correlations (see claim 11); generating

an average signal magnitude for each frequency offset based upon the re-sampled

signal magnitude information for the frequency offset (see col. 18, lines 24-47.); and

curve-fitting the computed frequency error modulation representation to the averaged

signal magnitude information.(see col. 18, lines 48-67. After the averaging of the

correlation (non-coherent accumulator) the result are sent to the control unit where the

peak time is estimated by using an algorithm or interpolation.)

Re claim 13, the combination of Tiemann and applicant's prior art further teach

that, further comprising: aligning each signal correlation time-segment with a

corresponding time segment of the pre-stored data. (One skill in the art would know that

if pre-stored data is offset, then the pre-stored data is aligned or synchronized with the

incoming signal.)

Claim 14 is system claim corresponding to the method claim 1 above. Hence,

Hence, the steps in method claim 14 would have necessitated the system elements as

claimed. Therefore, claim 16 has been analyzed and rejected in view of claim 1 above.

Claim 15 is system claim corresponding to the method claim 1 above. Hence,

Hence, the steps in method claim 15 would have necessitated the system elements as

claimed. Therefore, claim 15 has been analyzed and rejected in view of claim 1 above.

Claim 17 is system claim corresponding to the method claim 4 above. Hence, Hence, the steps in method claim 17 would have necessitated the system elements as claimed. Therefore, claim 17 has been analyzed and rejected in view of claim 4 above.

Claim 20 is system claim corresponding to the method claim 11 above. Hence, Hence, the steps in method claim 20 would have necessitated the system elements as claimed. Therefore, claim 20 has been analyzed and rejected in view of claim 11 above.

Claim 21 is system claim corresponding to the method claim 12 above. Hence, Hence, the steps in method claim 21 would have necessitated the system elements as claimed. Therefore, claim 21 has been analyzed and rejected in view of claim 12 above.

Claim 22 is system claim corresponding to the method claim 13 above. Hence, Hence, the steps in method claim 22 would have necessitated the system elements as claimed. Therefore, claim 22 has been analyzed and rejected in view of claim 13 above.

Claims (7-10 & 18-19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemann et al (hereinafter Tiemann)(US Patent 6,009,118) and applicant's prior art, as applied to claim 1, and in further view of Eschenbach (US Patent 6,546,040 B1).

Re claim 7, the combination of Tiemann and applicant's prior art fails to teach

that, further comprising:determining whether the frequency error estimate satisfies a

predetermined condition; if the frequency error estimate satisfies the predetermined

condition: further correlating the received signal with a second plurality of offset pre-

stored data sets; further generating at the predetermined data rate interval a second

plurality of signal correlations for the second plurality of offset pre-stored data sets; and

computing a second frequency error estimate based upon the second plurality of offset

pre-stored data sets. However, Eschenbach does. (see Fig. 5A & see col. 8, lines 39-

65 & col. 10, lines 23-34 & col. 11, lines 14-67 & col. 12, lines 10-29.)

Eschenbach discloses a GPS receiver which correlates the representative code

epochs to a replica code epoch, time or phase offset, for providing frequency

corrections and computing a GPS pseudorange when the frequency error is less than a

threshold.

Taking the combined teachings of Tiemann, applicant's prior art, and

Eschenbach as a whole, it would have been obvious to one of ordinary skill in the art to

have incorporated these steps into the modified system of Tiemann in the manner as

claimed and as taught by Eschenbach, for the benefit of providing frequency corrections

and GPS pseudoranges.

Re claim 8, the combination of Tiemann, applicant's prior art, and Eschenbach

further discloses that, wherein further correlating the received signal with a second

plurality of offset pre-stored data sets further comprises: further generating a second

plurality of frequency offsets based upon the frequency error estimate for the pre-stored

data (In Tiemann, see col. 12, lines 15-31. Furthermore, in Eschenbach see Fig. 5A &

see col. 8, lines 39-65 & col. 10, lines 23-34 & col. 11, lines 14-67 & col. 12, lines 10-

29); and further generating a second plurality of offset pre-stored data. (In Tiemann, see

col. 12, lines 15-31. Furthermore, in Eschenbach see Fig. 5A & see col. 8, lines 39-65

& col. 10, lines 23-34 & col. 11, lines 14-67 & col. 12, lines 10-29)

Re claim 9, the combination of Tiemann, applicant's prior art, and Eschenbach

further discloses that, wherein computing a second frequency error estimate based

upon the second plurality of offset pre-stored data sets further comprises: further

computing second signal magnitude information for each of the second plurality of

signal correlations; further sampling the second signal magnitude information from each

of the second plurality of signal correlations at the predetermined time; further

computing a second frequency error modulation representation of the received signal;

curve-fitting the computed second frequency error modulation representation to the

sampled second signal magnitude information; and computing a second frequency error

estimate based upon the curve-fitting. (Hence, if frequency error computed does not fall

within a predetermined threshold, the system will enter a mode or an iteration, which will

strive to search for a correlation that best estimates the error. Therefore, this claim has

been analyzed and rejected in view of claim 1.)

Re claim 10, the combination of Tiemann, applicant's prior art, and Eschenbach further discloses that, wherein determining whether the frequency error estimate satisfies the predetermined condition by: comparing the frequency error estimate with a predetermined allowed frequency error (In Eschenbach, see Fig. 5A); and determining the frequency error estimate satisfies the predetermined condition if the frequency error estimate is less than the predetermined allowed frequency error. (In Eschenbach, see Fig. 5A)

Claim 18 is system claim corresponding to the method claim 10 above. Hence, Hence, the steps in method claim 18 would have necessitated the system elements as claimed. Therefore, claim 18 has been analyzed and rejected in view of claim 10 above.

Claim 19 is system claim corresponding to the method claim 10 above. Hence, Hence, the steps in method claim 19 would have necessitated the system elements as claimed. Therefore, claim 19 has been analyzed and rejected in view of claim 10 above.

Response to Remarks

<u>Regarding the rejections on the ground of nonstatutory obviousness-type double</u>

<u>patenting</u>

The applicant asserts that *"the King application was granted as the King Patent,*

specifically U.S. Patent No. 6,775,319, App. No. 09/931,121 (issued August 10, 2004)

as was previously cited above. Therefore, Applicant believes the provisional

nonstatutory obviousness-type double patenting rejection to be moot, or otherwise an

oversight, and addresses only the rejection based on the patent claims. See USPTO

Office Action, page 3 & 4 (mailed Jan. 5, 2007) [hereinafter "Jan. 5th OA"] (regarding

the provisional and non-provisional rejections). Regarding the rejection of the instant

claim 1 on the ground of nonstatutory obviousness-type double patenting based on

claims 1 and 36 of the King patent, the Applicant believes the instant claim 1 as

amended herein is patentably distinct and non-obvious over claims 1 and 36".

The examiner respectfully agrees. By incorporating the features of dependent

claims 2 and 3 into claim 1, claim 1 is patentably distinct over claims 1 and 37.

Therefore, the provisional double patenting rejection over claim 1 of the instant

application has been withdrawn.

<u>Claims 1-2, 4-6, 14, 15 & 17 are rejected under 35 U.S.C. § 102(b)</u>

The applicant asserts that *"independent claim 1 has been amended to*

incorporate the features of dependent claims 2 and 3. Claims 2 and 3 have been

canceled. Reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claim 1

is respectfully requested based on claim 1 being amended to incorporate the features of

previous dependent claim 3."

The examiner respectfully agrees. Again, by incorporating the features of

dependent claims 2 and 3 into claims 1 & 14, claims 1 & 14 are no longer anticipated by

the reference of Tiemann et al. Therefore, the 102(b) rejection over claims 1 & 14 of the

instant application has been withdrawn. However, claims 1 & 14 have been rejected

over Tiemann et al and in view of applicant's prior art.

Claims 3, 11-13, 16 & 20-22 are rejected under 35 U.S.C. § 103(a)

The applicant asserts that "the King patent and the instant application were under

common ownership at the time the claimed invention was made. Recordation of

assignment of the instant application to Motorola, Inc. may be found under USPTO

assignment records, Reel/Frame 014874/0906, while recordation of assignment of the

Kingpatent to Motorola, Inc., at the time the claimed invention was made, may be found

under USPTO assignment records, Reel/Frame 012105/0051. Therefore, with respect

to the above noted assignments, and in accordance with 35 U.S.C. § 103(c)(1), the

Kingpatent cannot be used to preclude patentability under 35 U.S.C. § 103(a) for the

instant application. Therefore withdrawal of the 35 U.S.C. § 103(a) rejections of claims

3, 11-13, 16 & 20-22 is respectfully requested".

The examiner respectfully disagrees. The examiner did not mentioned that the 103(a) rejection made over the instant claims were in view "The King patent", rather, in view of appicant's prior art. The applicant cited, in his disclosure, that "it is known in the art the frequency error modulation representation of the received signal can be expressed as [sinx/x]". Therefore, the 103(a) rejection made over the instant claims stands.

Claims 7-10 & 18-19 are rejected under 35 U.S.C. § 103(a)

The 103(a) rejection made over the instant claims stands. See arguments above.

Conclusion

2.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
March 15, 2007

DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER